REMARKS

Claims 1-11, 31-36, 55, 72-79 and 81-86 were previously canceled while claims 37-54 were previously withdrawn from consideration. Therefore, claims 12-30, 56-71, 80 and 87-110 are currently at issue.

Claims 12 and 56 are amended to recite "the process controller," instead of "a process controller" to correct an antecedent basis issue. Claim 80 is amended to recite "a first interface," instead of "an interface" to correct an antecedent basis issue. Claim 22 is amended to correct typographical errors as noted by the office action. Thus, Applicants respectfully request withdrawal of the objects to claims 12, 22, 56, and 80.

Independent claims 12, 56, 80, and 91 recite an input/output (I/O) device for use in a process control system for providing communications between a process controller and a first device via a bus. Claims 12, 56, 80, and 91 are amended to specifically recite that the process controller implements a control routine to produce a device control signal based on one or more process parameter measurements and that the first interface of the I/O device is adapted to receive one or more control signals from the process controller for the first device via the bus or to provide one or more process parameter measurements from the first device to the process controller. Applicants submit that these amendments do not add any new matter as these amendments are fully supported by the description of the application as originally filed.

Generally, the I/O device recited by claims 12-30, 56-71, 80, and 87-90 can be one of several I/O devices communicatively linked to a process controller via a bus and communicatively linked to one or more devices (e.g., field devices) using a communication link apart from the bus. Thus, the claimed I/O device, in one embodiment, couples signals from one or more field devices to the process controller via the bus. Upon detection of an error within the I/O device, the I/O device can sever its communication link with the bus. As

discussed in the specification, this feature provides a failsafe to ensure that a single malfunctioning I/O device does not negatively impact the communications between the process controller and other I/O devices on the bus.

As known by those skilled in the art, a process controller, as recited by the pending claims, provides continuous (e.g., periodic) control of one or more field devices coupled to the process controller to maintain the process in a desired state using the field device. To maintain the field device, process parameter measurement signals from one or more field devices coupled to the process controller can be used by the process controller to generate control signals to be delivered to the one or more field devices. In other words, the process controller of the claimed method and system implements a control routine to produce a device control signal based on one or more process parameter measurement signals.

As further known by those skilled in the art, a process controller may communicate with a plant network system to provide information about operations under the process controller's management (e.g., field device operation) and to receive setpoint signals that are used in adjusting the operation of a process controller. However, as also known by those skilled in the art, a plant network system is not a process controller. Specifically, the plant network does not provide a device control signal intended for a particular field device. While a device on the plant network may provide, in some instances, a setpoint signal to a process controller to adjust the operation of a process controller, a setpoint is distinct from a control signal because a control signal is based on and developed from at least a process parameter measurement signal.

Furthermore, I/O devices on the network are not process controllers, as known by those skilled in the art and as recited by the pending claims, because I/O devices do not generate a control signal based on process parameter measurement signals. While I/O

devices may translate signals between different communication links, for example, between one or more bus protocols, I/O devices do not calculate a control signal based on process parameter measurement signals.

Applicants respectfully traverse the rejection of claims 12-30, 56-71, 80, and 87-110 as anticipated by Safadi (U.S. Patent No. 5,379,278). Each of claims 12-30, 56-71, 80, and 87-110 recites an input/output (I/O) device that receives control signals from a process controller for a first device via a bus using a first interface and that communicates with a first device apart from the bus using a second interface, where the I/O device severs the link to the bus upon detection of a fault. Further, these claims are amended to more clearly recite that the processor controller is a device that implements a control routine to produce a device control signal based on one or more process parameter measurement signals and that the first interface of the I/O device receives one or more device control signals from the process controller for a first device via the bus or provides one or more process parameter measurements from the first device to the process controller. None of the cited art discloses or teaches an I/O device that receives signals from a process controller for a first device via a bus that communicates with the first device apart from the bus, and that severs a coupling to the bus upon detection of a fault, as recited by the claims at issue. Therefore, none of the cited art can anticipate any of the claims at issue.

The Examiner reads the Safadi plant control network 11 as a process controller and reads the Safadi process controllers 20, 20A, and 20B as the claimed I/O devices. Applicants have amended the pending claims to prevent this reading. Specifically, Applicants have amended the claims to recite that the process controller produces a device control signal based on one or more process parameter measurements and that the I/O device receives one or more control signals from the process controller for the first device via the bus or provides

one or more process parameter measurements from the first device to the process controller. As amended, the claims make clear that the plant control network 11 of Safadi is not a process controller that produces a device control signal for a first device, nor is the Safadi process controller 20 an I/O device that receives one or more device control signals from a process controller via a bus from which the I/O device disconnects.

In particular, none of the devices that make up the plant network 11 of Safadi can act as a process controller with respect to the process controllers 20, 20A, and 20B, cited by the office action as the claimed I/O devices. As shown in Figure 1 of Safadi, the process controller 20 may be connected to a plant control network that includes a universal operating workstation 122, an application module 124, a history module 126, and a computer module 128. However, none of the universal operating workstation 122, application module 124, history module 126, and computer module 128 is a process controller because none of elements 122-128 produces a device control signal for a first device based on one or more process parameter measurement signals. Generally, a workstation or other device on a plant control network may send setpoints to various process controllers in a plant. However, as discussed above, these setpoints are not device control signals. Instead, a device control signal is based on at least a process parameter measurement signal. Thus, none of the Safadi devices 122-128 described within plant control network 11, as shown in Figure 1, is a process controller.

Moreover, while Figure 1 shows that the process controller 20 may be indirectly connected to other process controllers 20A and 20 B via the plant control network, even if one of the process controllers 20 is considered the claimed I/O device, which Applicants submit it is not, Safadi still fails to disclose that any one of process controllers 20, 20A, or 20B generates a device control signal to any other process controller (20, 20A, or 20B).

Thus, none of the process controllers 20, 20A, or 20B of Safadi may be considered a process controller that generates a device control signal for another process controller (20, 20A, or 20B) acting as the claimed I/O device. Applicants also note that Safadi itself distinguishes between a process controller, such as 20, 20A, and 20B and a plant network 11 by labeling elements 20, 20A, and 20B as process controllers and labeling element 11 as a plant network. As known by those skilled in the art, the only process controllers disclosed by Safadi are process controllers 20, 20A, and 20B.

Furthermore, while Safadi discloses a process controller 20 that is capable of disconnecting from a redundant communication line to a plant network (i.e., the UCN), Safadi fails to disclose the claimed I/O device because Safadi fails to disclose that its process controller 20 (cited by the office action as an I/O device) receives a device control signal of any kind. Moreover, the Safadi I/O module 21 that is integrated with the controller 20 and that may receive a control signal from process controller 20, does not sever a connection to a bus between the I/O module 21 and process controller 20. It follows that Safadi fails to disclose that its process controller 20 may be considered the recited I/O device that receives, via a bus, a device control signal produced by a process controller and severs a link to the bus upon detection of a fault. Therefore, Safadi cannot anticipate the pending claims.

Applicants respectfully traverse the rejections of claims 14-17, 21-27, 29-30, 58-61, 66-71 and 87-90 as obvious over Safadi in view of one or more of Yap (U.S. Patent No. 6,073,193), Lee et al. (U.S. Patent No. 6,615,301), what the examiner has referred to as the Applicants Admitted Prior Art (AAPA), and Kato et al. (U.S. Patent No. 6,397,277), collectively referred to as the cited art. No combination of Safadi with Yap, Lee et al., the

AAPA and Kato et al. can render any of the claims at issue obvious because none of Yap, Lee et al., the AAPA or Kato provides the disclosure missing in Safadi, nor has the Examiner cited them for this purpose. In particular, while each of Yap, Lee et al. and Kato et al. are generally directed to computer related communication devices, these documents do not disclose a process control system, much less the use of I/O devices or field devices within a process control system. Still further, it does not appear that any of these documents discloses the severing of a communication connection based on the detection of a device fault within any type of device, much less a process control device such as an I/O device or a field device. As a result, none of Yap, Lee et al. or Kato et al. provides any disclosure or suggestion of an I/O device that severs its connection with a bus upon the detection of a device fault. Likewise, the AAPA, which merely discusses one possible effect of an I/O device undergoing a failure on a bus, does not provide this disclosure.

Still further, none of the cited art provides a motivation to modify any of their teachings to provide an I/O device for coupling one or more devices (e.g., field devices) to a process controller via a bus that severs a connection between the I/O device and the bus upon detection of a fault in the I/O device. Safadi does not even recognize the problem with malfunctioning I/O devices because it is not concerned with an I/O device setup as in the claimed configuration. Specifically, Safadi discloses operation of a redundant process controller in which one controller must be disconnected while a second controller is activated. Thus, Safadi is primarily concerned with faults originating within a process controller, not from an I/O device that may interfere with the communications of other devices, including a process controller, on a bus. The Safadi disclosure is completely directed to the situation which arises when redundant controllers are connected to redundant buses, which gives rise to a "jabber" condition in the controller when both busses experience

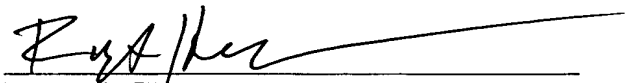
problems. (See, Safadi, Col. 4, lines 14-43). The claimed device and method, on the other hand, is for example used to prevent a faulty I/O device from interfering with the communications of other such devices on the bus. Safadi does not recognize this problem, much less provide any suggestion or motivation for correcting this problem.

It is clear that the prior art must make a suggestion of or provide an incentive for a claimed combination of elements to establish a *prima facie* case of obviousness. *See, In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992); *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (Bd. Pat. App. 1985). This principle holds true even if the applied art could be modified to produce the invention recited by the pending claims. *See, In re Mills,* 16 U.S.P.Q.2d 1430, 1432 (Fed. Cir. 1990); *In re Gordon,* 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.") Because each of Safadi, Yap, Lee et al., the AAPA and Kato et al. fails to disclose or provide any motivation for severing a communication connection between an I/O device and the bus to which it is connected within a process control system, it follows that no combination of these documents can render any of the claims 12-30, 56-71, 80 and 87-90 obvious.

CONCLUSION

For the foregoing reasons, Applicants respectfully request reconsideration and withdrawal of the rejections and allowance of claims 12-30, 56-71, 80 and 87-110. If there are matters that can be discussed by telephone to further the prosecution of this application, Applicants respectfully request that the Examiner call its attorney at the number listed below.

Respectfully submitted,

By: 

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